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ABSTRACT

An effort to implement a schoolwide innovation concerning computer applications begun in the English Department of the Hauppauge Middle School on Long Island, New York, is described. The program was proposed and implemented through a series of meetings, discussions, workshops, and orientations for teachers and administrators. English teachers, who attended workshops to refine their knowledge and to update the previously developed curriculum, were each assigned to four English sections and to one computer applications session which provided students with worthwhile exposure for ten weeks of the school year. The primary goals of the applications course were to teach children in seventh and eighth grade the current methods of word processing, to develop their skills with the data base, and to keep students up to date with regard to the role of computers in their world and society at large. The seventh graders were introduced to keyboarding, word processing, basic graphic techniques and data base systems. Students in the eighth grade first took a review course and then, with the cooperation of teachers from other disciplines, produced reports which were recognized for credit in both the computer laboratory coursework and other subject areas. Students also produced brief research papers using written resources and computer facilities of the library media center. Positive feedback from administrators and faculty, as well as students, attest to the success of this program. (KEH)

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Computer Applications: A Schoolwide Innovation

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The Hauppauge Middle School is located on Long Island, New York. It is part of a comprehensive K-12 school district, and the vast majority of its students are middle class. The district is known for its language arts innovations, some of which have been designated exemplary status. In this paper, we would like to describe the Middle School English Department's efforts which led to the successful implementation of a schoolwide innovation concerning computer applications.

Identifying the Need

Initially, the language arts coordinator and the building principal met often to discuss the potential for carrying out computer applications activities. They considered the changing technological world in which we live and the need to prepare students for these changes. They discussed links between the humanities and technology rather than generate an erroneous sense of computer applications only fitting into the mathematics domain. They also considered the English staff for this innovation because of their reputation of being flexible, innovative, and growth-oriented. Finally, they agreed that before putting the cart before the horse, they should have exploratory meetings with the English staff.

An Evolving Concept

During several department meetings, the staff seemed genuinely interested in the innovation but voiced a variety of concerns. To what extent will computer applications support

children's growth as learners? Will the teachers receive in-service education? Are there opportunities for curriculum development? Will laboratory or teaching assistants be available? Does the district plan to provide financial support for these efforts? These and other realistic concerns established a basis for immediate direction.

One English teacher who already had completed 15 graduate credits in computer science volunteered to serve as a mentor for the staff. Another teacher who was a building representative for the teacher association indicated that added sections of computer applications could benefit children while they maintain teaching positions during a difficult time of declining student enrollment and its related teacher excessing. She further indicated that the teacher association would enthusiastically support the innovation. Others said they would be willing to explore potential courses at local universities, at the Board of Cooperative Educational Services (BOCES), and at the Suffolk County Organization for the Promotion of Education (SCOPE). The language arts coordinator and the building principal promised to meet with the central office staff to secure a thorough commitment to the innovation.

During these central office meetings, charismatic discussions focused on how children would benefit from exposure to computers. Fortunately, the assistant superintendent for instruction was a long-term proponent of computer education, and several members of the board of education were executives for companies that used computers extensively. Consequently, those

who were in major decision-making positions believed that children would derive essential benefits from computer experiences.

This foundation set the stage for a specific commitment to the innovation. For example, the central office staff agreed to provide a budget line item that would secure microcomputers and related software and that would be protected against future cuts. Other aspects of the commitment included not excessing members of the teaching staff (regardless of declining student enrollment) so that sufficient personnel are available to teach the computer applications sections. The central office staff also agreed to provide facilities suitable for a computer laboratory setting. Finally, the assistant superintendent for instruction supported comprehensive inservice education and curriculum development.

The inservice and curriculum activities were continuous. The English staff attended graduate courses and conferences offered at local universities. They also participated in workshops designed to promote hands-on awareness of microcomputers. Another important aspect of staff development was the school district's commitment to full-day sessions for the staff. Substitute teachers replaced English teachers in the classroom while the English staff attended these worthwhile sessions. The teacher who had a substantial background in computer science conducted many of the workshops. He provided practical experiences and associated these experiences with appropriate theory and research. In addition to the full-day sessions, he conducted curriculum development workshops for which he and the staff were remunerated. The scope of these workshops ranged from a review

of keyboarding which is introduced in the elementary schools to a thorough grasp of different menus to an awareness of word processing.

These efforts demonstrated their actual worth during their application to the classroom. Interestingly, as classroom experiences nurtured children's growth, they also continued to support inservice education and curriculum development. In this context, the teacher who led the workshops served as a mentor to other staff members who were assigned to only four teaching periods rather than the typical five. Thus, during one instructional period each day for an entire school year, the English teachers visited the mentor's classroom/computer laboratory and became involved with the microcomputers. They also worked cooperatively with his lab assistant who provided detailed support. During the first ten-week progress period, the teachers observed their mentor. For the next twenty weeks, they were gradually weaned from making daily observations to providing assistance with instructional lessons and units. By the last progress period, the staff demonstrated how much they gained from the mentor by functioning independently with computer applications. At the conclusion of the school year, the English teachers returned to a paid summer workshop to refine their knowledge and to update the previously developed curriculum.

The Computer Laboratory

This comprehensive commitment to the teachers' professional development sent a positive message to the faculty,

administration, parents, and children. It also provided a sound foundation for the innovation to be a success. Currently, all of the English teachers are assigned to four English sections and one computer applications section, except for the mentor who is assigned to two English classes, two computer applications classes, and a daily schedule as a mentor. He also is exempt from a conventional duty assignment and instead provides additional support to the staff. The computer applications sections provide all students with worthwhile exposure for ten weeks of the school year, while these students simultaneously attend English classes for forty weeks.

When the children enter the computer laboratories, they are assigned to one of twenty-four Apple 11 GS computers. Each series of four computers is linked to an Imagewriter 11 printer by means of an a/b/c/d switch. This switch allows any of the four computers, one at a time, to gain access to the printer. The computers are located on computer tables which line the perimeter of the room in a horseshoe configuration. The center of the room contains twenty-four student desks for the purpose of lecture type presentations that are necessary from time to time. The computer laboratories are used nine periods a day for group instruction and for a forty-minute period before school each day.

Some of the primary goals of the applications course are to teach children in grades seven and eight the current methods of word processing, to develop their skills with the data base, and to keep students up to date with regard to the role of computers in their world and society at large. To achieve this, a ten-week

computer applications program is offered to seventh and eighth grade students.

The seventh grade program has four primary components. First, the students are given detailed instruction on how to properly function in the environment of the computer lab. They are taught to properly care for and handle the floppy disks. They are also instructed on the correct use of the computer and its peripherals. Then, the students are given a concise introduction of computer systems in general. They learn about the various types of computer systems available beginning with the massive main frame computer, ending with the home or microcomputer used in the lab. They are briefly told how and where these systems are used. After this brief introduction, the students move on to learning specifics about the apple keyboard. Students are now ready to proceed to a basic keyboarding program.

The keyboarding program is called Microtype, The Wonderful World of PAWS. This program is a sequence of sixteen consecutive lessons which comprise the second component of the ten-week applications course. The PAWS program allows the student to evaluate his/her progress after each lesson. The child develops a workable knowledge of the keyboard after completion of the program. At the end of each lesson, the student is given a lesson code which supplies the computer instructor with a coded report on the student's progress. The code gives the instructor the lesson number the student is working on, how often lines were repeated due to some deficiency, and what is recommended as a next step for the student. Each child's report is printed and

turned in to the lab assistant at the end of each lesson. The assistant sorts the coded results and informs the teacher if any further drill work is needed for particular students. This program gives students the familiarity with the Apple keyboard that is necessary for them to continue on to the word processing segment of the course.

Students having developed a more than adequate level of keyboard proficiency eagerly begin learning about word processing with a well-founded confidence in their keyboarding skills. Scholastic's PFS:WRITE program is the third component of the course, and it is used to teach the word processing segment. Sometime during the fourth week, the student begins to learn about what word processing is and how to use it.

One of the first things a child encounters is the functions on the main menu. These functions include the following selections:

TYPE EDIT

DEFINE PAGE

PRINT

GET/SAVE/REMOVE

CLEAR

EXIT

Once the students are aware of the menu terms, the class initially proceeds to use each of the functions. The first and major function of the word processing program is, of course, the TYPE EDIT item.

The TYPE EDIT function is selected, and the user is confronted with a screen containing margins, a ruler, a status line, and a flashing cursor, all which graphically represent a sheet of typing paper. Next, a variety of lessons which are contained on a student resource disk are called up using the GET/SAVE/REMOVE function. The student then proceeds with experiments in manipulating the cursor through various portions of the document. There are several carefully developed lessons which prompt the child on how to use the ruler, margins, tab settings, etc. Now the child must quickly learn to save the changes made during these lessons.

The students must again use the GET/SAVE/REMOVE function to store the completed document on their student disk. Each of the twenty-four students is given a personal disk. The personal disk is used in each of the subsequent lessons either to store their work or to recapture uncompleted lessons for the purpose of completing them. Once a student finishes a lesson, it must be carefully printed out and turned in for verification.

The print function can be employed at different levels of sophistication. At first, the student is given specific directions that help to produce a basic print out. As the lessons become more complex, the printouts also become more involved. Soon the child learns that the appearance of the printed package can be altered simply by changing the various components of the printing menu. Very soon, by changing margins and print spacing and adding headings and footings, most students begin to produce

professional looking documents. Some of the more creative documents actually border on the artistic.

As students proceed, once again their attention is captured by interesting lessons on the more sophisticated capabilities of the TYPE/EDIT function. Using a variety of exercises, each student is taught how to boldface items, to move blocks of text, to duplicate text, and to remove unwanted pieces of text. As individuals approach the final lessons, they are required to set decimal and typewriter tabs. Soon, other lessons direct the student to search for and replace words and phrases throughout more lengthy documents contained on the student learning activities disk. Next, the seventh grader learns to proof text using the program's dictionary function. Finally, the concept of templates is introduced. The student begins with a template of a business letter and then progresses to printing simple form letters using this template. Having learned general use of the word processor, the student is ready to begin experimenting with the graphic programs.

The fourth component of the seventh grade curriculum is an integration of basic graphic techniques with the word processor. Students become familiar with a variety of fonts, page layouts, drawing implements, and programs. Print Shop is used to teach students how to create covers and title pages for their word processed documents. The truly artistic are introduced to drawing devices such as the Koala Pad and drawing programs such as Dazzle Draw and Animate. The students are encouraged to be original and to integrate the word processor with their own

graphics to complete a basic research project related to the world of computers and computing. The librarian's endless energies and technical assistance and the wonderful computer resources in the Middle School Library Media Center have enabled the students to complete imaginative reports. Students can get additional hands-on experience by using the library's computer terminal which is hooked up to a Dow Jones information retrieval system. This system helps children gather report data. The report topics have ranged from a thorough piece on "History of Computers and Computing" to reviews of new software available to the latest in robotics or computer technology. The student who completes this course is well prepared for the introduction of the new topics and techniques taught in the eighth grade segment of the program.

The current eighth grade program contains five integrated segments. They are, of course, not equally proportioned. For example, the historical or cultural aspects of the computer are an integral part of learning about computers, but they are not a large part of most applications programs. The first of the segments concerns a brief look at computers and society. Students are taught how to identify the various computers by the size and function. They are also able to recognize the characteristics associated with the five generations of the computer. Since the program's thrust is applications, the children move quickly to the more operational types of lessons. This leads to the second segment of the ten-week course.

As students progress from seventh to eighth grade, a lapse of time exists between the applications courses. It is therefore necessary for some keyboarding review to hone the skills required by the remainder of the eighth grade course. Microtype, The Wonderful World of PAWS and other keyboarding programs and exercises are used to give the child a fresh feel for the keyboard. The student is then reintroduced to the PFS:WRITE word processing program for a brief period of time.

The review course for PFS:WRITE uses an activities disk which gives the student considerable practice with the more essential word processing functions. These activities contain prompts that allow the student to work independently for most of the review sessions. If more review is required than time allows, individuals are encouraged to attend the morning lab for assistance. The A.M. lab is an integral part of the program, and it will be discussed in more detail later on.

With the word processing review behind them, the students are reacquainted with templates. The templates, however, become more sophisticated, more functional, and even more creative than they were when the student first learned how to use them as part of the seventh grade program. Now the child creates intricate templates which are interdisciplinary in nature. That is, a given student may create a scientific template to be used for science homework or a bibliographic template to be used when writing reports for the English class. Ultimately, through the encouragement and cooperation of teachers from other disciplines, the student produces reports which are recognized for credit in

both the computer lab and other subject areas. The eighth grader learns how to create standardized lists which are later mechanically appended to documents that he/she previously created with the word processor. Once again, as in the seventh grade, the student is encouraged to produce a brief research paper using the written resources and computer facilities of the Library Media Center. Eighth grade students are asked to use the computerized information retrieval system to recreate movie or book review documents based on the printouts they receive electronically. As time allows, children complete a variety of extra credit projects, such as an electronic review sheet which contains information to help them study units in an academic area. They also may complete homework assignments with the word processor. Individuals now have a working knowledge of PFS:WRITE and are ready for the next component of the course.

The PFS:FILE program is used to teach a data base system to the students. This system allows the user to group information according to a variety of criteria determined by the user and then to manipulate and control this information. Of course, quick and easy access to these data is what makes the data management system such a valuable tool for anyone who may need this information in some form. The students quickly become aware of the usefulness of a data management system when they are asked to seek out information contained in a long and comprehensive paper version of a file. The same information is contained in the electronic file they are about to use. A teacher directed

search using the electronic file allows the students to draw the following conclusions:

A. The speed with which one can search for and retrieve information with the aid of a data management system cannot be matched by the student when using the paper file.

B. The electronic file allows one to manipulate this information with a speed that would take a paper file user hours, days, or even weeks.

C. The printouts achieved electronically are varied and can be of enormous use to anyone researching information. The ease with which one can change data and produce reports cannot be matched by the paper file user.

Next, the student is familiarized with the PFS:FILE function menu. Two electronic files (from Scholastic's Working with PFS:FILE) are used to teach the data base component of the program. The first file entitled "Olympics" contains olympic records from 1948 to present. A sample file form is as follows:

Olympic Records 1948 - Present

Event: 10 Kilometers
Category: Nordic Skiing
Year: 1984
Site: Yugoslavia
Sex: (Male, Female, Mixed): Female
Scoring (Time, Points, Distance): T
Gold Medal Winner
Individual: Marja-Liisa Haemaelainen
Nationality: Finland
Winning Score: 31:44.2

The student becomes proficient in accessing information from this olympic file and in completing reports based upon the information ascertained from this file. Each user is able to quickly find the desired form by using the appropriate search criteria. For example, one might be asked to locate all the forms in the file containing gold medal winners from Finland. His/Her search criteria would have to contain a statement about Finland as opposed to selecting all countries in the Nationality location.

Perhaps, another student might be trying to locate a United States gold medal winner of the Women's 3,000 Meters event with a specific score during a certain year. The student would need to set up special search criteria based upon key factors in the search. The key factors in this search would be specifics about the following data items: the Nationality, Event, Winning Score, Sex, and Year.

The next stage for the child is to learn how to print out the information that results from the search using the PFS:REPORT program in conjunction with the PFS:FILE program. Using this program, the student can request a simple, straight-forward printout or one containing a more sophisticated format. A more demanding printout might contain not just a simple list of gold medal winners from Finland but instead a list arranged according to winning scores in descending order. The printout might also contain only certain specified information.

A printout from the ZOOS file might contain only the Canadian zoos with greater than 100 acres arranged in descending

order according to number of species. The experienced student knows how to calculate lines per page, the number of forms across a page, and the form width. He/She also knows how to evoke special printing effects using codes which enable the printer to set up condensed or expanded style printing.

A personal file devised by the student is the natural next step. Each student must create his/her own file containing information that will be useful, perhaps a personal phonebook or a file of collectibles. The completed files are printed and turned in for evaluation. When this task is completed, the child learns how to integrate the word processing and data base programs.

Each student must create a template of a form letter relating to the information in the file. Once that is completed, the student prints a series of letters which are electronically selected and then integrated with specific forms from the file. The result is a professional looking document made up of information from the template and the data base file.

With the data base well in hand, the students are given time to complete a project they select from a list offered by the library. A typical project might be to use Long Island Population Statistics to create a file. Based on the information in their file, they write a two page report showing population growth in some selected townships. Finally, they use graphic programs to create charts and a cover page.

The final component in our curriculum is the graphic element. The eighth grade student may choose to learn a variety of

sophisticated graphic programs. The advanced student may decide to learn PFS:GRAPH, a program which integrates the entire PFS series.

As part of a continued commitment toward making students computer literate, a morning lab is available. The lab runs five mornings a week and offers all students the opportunity to use the microcomputers. The lab is designed to offer help to those students in the applications course who need to make up missing work or simply to reinforce the lessons they are currently learning. The morning lab also consists of students who have a desire to explore the many programs available. Programs include challenging critical thinking skill games, graphic programs, and creative and expository writing programs. Students also visit the lab to use the word processor and graphic tools to complete assignments across the curriculum. The primary goals of the lab are to initiate the novice user by providing a non-threatening hands-on experience with the computer and to provide the experienced user with the latest software and technology.

Benefits

As we reflect on the evolution of this innovation, we realize that a variety of benefits have occurred. Some of these are worth mentioning.

1. The teachers sensed a genuine commitment to their professional growth, and they responded with enthusiasm. Feedback from the staff clearly indicated that they were satisfied that many of their initial concerns were considered

seriously by administration. In addition, the innovation was carried out during a difficult time of declining student enrollment and its potential threat of teacher excessing. Since additional staff was needed to teach the new sections of computer applications, no teachers were excessed. Not surprisingly, the English Staff as well as the entire faculty demonstrated high morale as they supported the innovation.

2. The use of a professional peer as a mentor showed respect for a vitally qualified resource within the teacher group, and it simultaneously supported an important aspect of teacher empowerment. This thrust also provided a smooth, practical transition since the mentor who conducted the workshops was the same individual who provided the follow-up application to the computer laboratory.

3. Most of the children effectively used computer applications in general and word processing in particular. During the word processing unit, some of the children learned to revise their writing with facility and thus to generate better written products.

4. Several special education students who were mainstreamed into the computer applications classes had severe dysgraphia and therefore had difficulty producing and understanding their own handwriting. These individuals gradually developed an aversion to writing. After having positive exposure to word processing, however, they were delighted to see a clear version of their text on the monitor. They also wrote

and revised essays more often and actually grew to enjoy writing.

5. The comprehensive steps taken to carry out computer applications supported long-term implementation of this innovation. Providing a budget line item that would be protected from future cuts, supporting continuous inservice education and curriculum development, and, most important, involving administration and the entire English staff assured ownership and sustenance of the innovation.

Summary

Thus far, the computer applications program is reaching a schoolwide audience. All students in grades 7-8 attend a ten-week mini-course each year and benefit from a variety of worthwhile experiences. The success of this innovation has much to do with the comprehensive commitment to inservice education and curriculum development. Feedback from the faculty indicates that they are satisfied with the school district's efforts and that they are especially enthusiastic about receiving guidance from a peer/mentor. In addition, the cooperative efforts of the central office staff, the Middle School principal, the language arts coordinator, and the English teachers have increased the chances of both short-term and long-term success. Since the Middle School has just been expanded to include sixth graders, future plans include adapting our computer applications program to reach this group of children. The entire program will also be evaluated and updated on a continuous basis. Although the schoolwide

innovation is not a panacea, it represents a timely commitment to the children of the Hauppauge Middle School.